

CLAIM AMENDMENTS

1. (Currently Amended) In a networked system, a device that is a computer subsystem, the device comprising:

one or more services executing in the device, each service including:

an information service, the information service being configured to produce a customizable tag-based document that holds a summary of device properties that a device service represents, the information service being further configured to store the customizable tag-based document until requested by [[the]] an application service;

a data service, the data service being configured to produce a customizable tag-based document that holds events which have been generated by the one or more services but not yet consumed by [[an]] the application service, the customizable tag-based document holding a state of the one or more services, the data service being further configured to store the customizable tag-based document until requested by the application service;

wherein each service including:

a port identifiable by an identifier that includes a unique designation of an operating system service or another service, the port of the service endowed with behavioral types specified by a unilateral contract; and

the unilateral contract for describing one or more behaviors of the service, wherein the one or more behaviors are described by behavior sentences, and further wherein the unilateral contract specifies:

regulation of the service by specifying attaching behavioral conditions to files to govern access control;

an order of messages that flow in or out of the service;

creation of an instance of communication, after being accepted by an external second service, between the service and the external second service, the external second service agreeing to perform the unilateral contract according to the order of messages specified in the unilateral contract.

2. (Previously Canceled)

3. (Previously Presented) The device of Claim 1, wherein the data service being capable of responding to queries regarding the events.

4. (Previously Presented) The device of Claim 1, further comprising a network device driver that enables communication between services.

5. (Original) The device of Claim 1, further comprising a decentralized operating system on which the one or more services are executed.

6. (Currently Amended) A computer-readable recording medium storing thereon computer-executable services comprising:

a terminal service comprising a display service that includes a cursor shape service with a port identifiable by an identifier; and

the computer-readable medium also storing thereon computer-readable information comprising:

a customizable tag-based document that describes ~~[[the]]~~ a shape of an on-screen cursor, the customizable tag-based document including image data specifying pixels that comprise the on-screen cursor, the customizable tag-based document also holding a state of the service representing a device for an input/output event and a state of the input/output event that has been generated by the service representing the device;

a unilateral contract for describing one or more behaviors of the display service and specifying regulation of the display service by specifying attaching behavioral conditions to files to govern access control, wherein the one or more behaviors associated with a service are described by behavior sentences, wherein the unilateral contract is accepted when another service promises to perform the unilateral contract in accordance with the one or more behaviors or when the other service performs the unilateral contract in accordance with the one or more behaviors, and wherein acceptance of the unilateral contract creates an instance of communication between the display service and another service.

7. (Previously Canceled)

8. (Currently Amended) The computer-readable recording medium of Claim 6, wherein the display service includes a cursor position service for describing the position of an on-screen cursor, the cursor position service including a port identifiable by an

identifier that includes a uniform resource identifier and a unilateral contract for describing one or more behaviors of the cursor position service.

9. (Currently Amended) The computer-readable recording medium of Claim 6, wherein the display service includes a window service for describing a window, the window service including a port identifiable by an identifier that includes a uniform resource identifier and a unilateral contract for describing one or more behaviors of the window service.

10. (Currently Amended) The computer-readable recording medium of Claim 9, wherein the display service includes a window list service for containing a list of window services appearing on a display, the window list service including a port identifiable by an identifier that includes a uniform resource identifier and a unilateral contract for describing one or more behaviors of the window list service.

11. (Currently Amended) The computer-readable recording medium of Claim 10, wherein the display service includes a window update service for refreshing a window represented by a window service, the window update service including a port identifiable by an identifier that includes a uniform resource identifier and a unilateral contract for describing one or more behaviors of the window update service.

12. (Currently Amended) The computer-readable recording medium of Claim 6, wherein the terminal service further comprises a keyboard service with a port

identifiable by an identifier that includes a uniform resource identifier and a unilateral contract for describing one or more behaviors of the keyboard service.

13. (Currently Amended) The computer-readable recording medium of Claim 12, wherein the keyboard service includes a data service for containing keyboard events generated by a keyboard, the data service being capable of responding to queries to remove keyboard events for processing.

14. (Currently Amended) The computer-readable recording medium of Claim 6, wherein the terminal service further comprises a mouse service, the mouse service including a port identifiable by an identifier that includes a uniform resource identifier and a unilateral contract for describing one or more behaviors of the mouse service.

15. (Currently Amended) The computer-readable recording medium of Claim 14, wherein the mouse service includes a data service for containing mouse events generated by a mouse, the data service being capable of responding to queries to remove mouse events for processing.

16. (Currently Amended) A computer-implemented method for processing input/output events by devices as services, the method comprising:

requesting, by a computing system configured to represent devices as services in a decentralized operating system, a service representing a device for an input/output event, the service including a port identifiable by an identifier that includes a uniform resource identifier and a unilateral contract for describing one or more behaviors of the service, the unilateral contract expressed in a language specifying an order of messages that flow in or out of services;

receiving a customizable tag-based document that describes a shape of a cursor, the customizable tag-based document including image data comprising a bitmap image and a bitmap mask specifying pixels that comprise the cursor and offset data specifying an offset between the pixels and a location pointed to by the cursor;

requesting the service to change a cursor shape, the act of requesting invoking a cursor shape service that changes the shape of the cursor based at least in part on the customizable tag-based document;

receiving a customizable tag-based message that contains a state of the service representing the device and the input/output event that has been generated by the service representing the device; and

requesting the service to remove the input/output event.

17. (Previously Presented) The method of Claim 16, further comprising requesting the service for creating a window, the act of creating a window creating a window service with a port identifiable by an identifier that includes a uniform resource

identifier and a unilateral contract for describing one or more behaviors of the window service.

18. (Previously Presented) The method of Claim 17, further comprising requesting the service for refreshing the window, the act of requesting invoking a window update service that repaints the window.

19. (Previously Canceled)

20. (Previously Presented) The method of Claim 16, further comprising requesting the service to change a position of a cursor, the act of requesting invoking a cursor position service that changes the position of the cursor.

21. (Currently Amended) A computer-readable recording medium storing computer-executable instructions for implementing a computer-implemented method for processing input/output events by devices as services, the method comprising:

requesting a service representing a device for an input/output event, the service including a port identifiable by an identifier that includes a uniform resource identifier and a unilateral contract for describing one or more behaviors of the service, wherein the one or more behaviors are described by behavior sentences, wherein the unilateral contract specifies an order of messages that flow in or out of services, wherein the unilateral contract is accepted when an external service promises to perform the unilateral contract according to the order of messages specified in the

unilateral contract or when the external service performs the unilateral contract according to the order of messages specified in the unilateral contract, and wherein acceptance of the unilateral contract creates an instance of communication between services;

receiving a customizable tag-based document that holds a state of the service representing the device and the input/output event that has been generated by the service representing the device;

requesting the service to change a cursor shape, the act of requesting invoking a cursor shape service that changes the shape of the cursor, the cursor shape described by a customizable tag-based document, the customizable tag-based document including image data specifying pixels that comprise the cursor shape;

requesting the service to change a position of a cursor, the act of requesting invoking a cursor position service that changes the position of the cursor; and

requesting the service to remove the input/output event.

22. (Currently Amended) The computer-readable recording medium of Claim 21, further comprising requesting the service for creating a window, the act of creating a window creating a window service with a port identifiable by an identifier that includes a uniform resource identifier and a unilateral contract for describing one or more behaviors of the window service.

23. (Currently Amended) The computer-readable recording medium of Claim 22, further comprising requesting the service for refreshing the window, the act of requesting invoking a window update service that repaints the window.

24-25. (Previously Canceled)

26. (Previously Presented) In a networked system, a device that is a computer subsystem, the device comprising:

one or more services executing in the device, each service including a port identifiable by an identifier that includes a uniform resource identifier and a unilateral contract for describing one or more behaviors of the service, wherein the port associated with the service comprises behavioral types, and wherein the device communicates with another device of the networked system based on compatibility of behavioral types, the device being capable of coupling to the networked system to exchange customizable tag-based messages, and wherein the one or more services comprise:

an information service, the information service being configured to produce a customizable tag-based message that hold a summary of device properties that a device service represents, the information service being further configured to store the customizable tag-based message until requested by the application service; and

a data service, the data service being configured to produce the customizable tag-based message that holds events which have been generated by the one or more

services but not yet consumed by an application service, the data service being further configured to store the customizable tag-based message until requested by the application service, and further wherein the customizable tag-based message holds the state of the one or more services.